

# Managing research at a national level

Ural Federal University  
6<sup>th</sup> October 2015

John Green

*formerly Chief Operating Officer, Imperial College London 2004 – 2010  
now Life Fellow, Queens' College Cambridge*



**UNIVERSITY OF  
CAMBRIDGE**

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# Rankings:

Imperial College  
London

UNIVERSITY OF  
CAMBRIDGE



THE TIMES

**HIGHER**

EDUCATION SUPPLEMENT

World University Rankings 2014/15 & **2015/16:**

• overall	13 <sup>th</sup>	<b>14<sup>th</sup></b>	4 <sup>th</sup>	<b>2<sup>nd</sup></b>
• engineering and technology	6 <sup>th</sup>		5 <sup>th</sup>	
• life sciences	10 <sup>th</sup>		3 <sup>rd</sup>	
• clinical, pre-clinical and health	4 <sup>th</sup>		3 <sup>rd</sup>	
• physical sciences	12 <sup>th</sup>		6 <sup>th</sup>	



World University Rankings 2014/15:

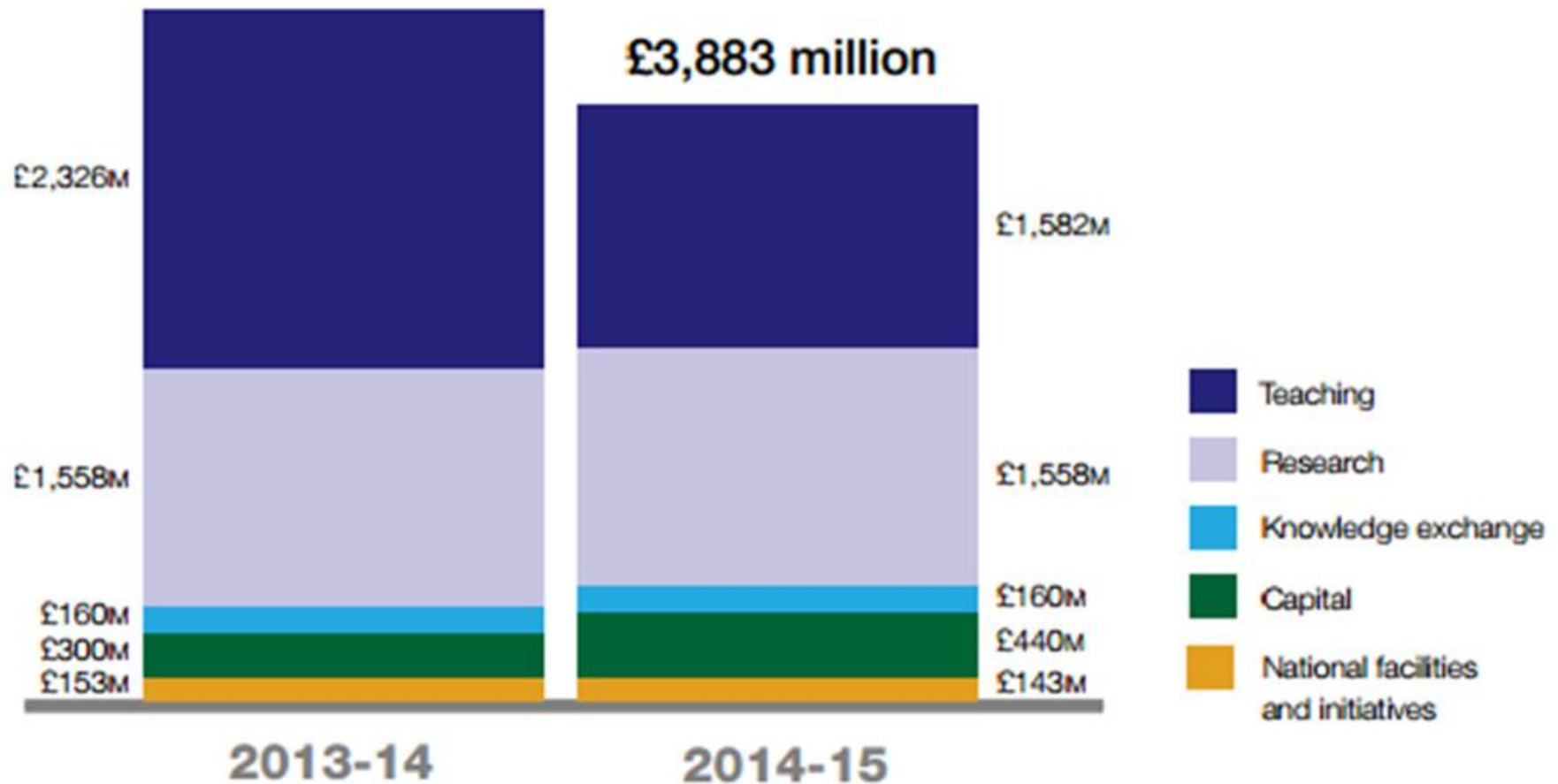
• overall	2 <sup>nd</sup> =	<b>8<sup>th</sup></b>	2 <sup>nd</sup> =	<b>3<sup>rd</sup></b>
• engineering and technology	6 <sup>th</sup>		4 <sup>th</sup>	
• life sciences & medicine	9 <sup>th</sup>		3 <sup>rd</sup>	
• physical sciences	11 <sup>th</sup>		3 <sup>rd</sup>	

# UK context: 14% yearly decreased funding

HEFCE grant 2013-14 and 2014-15

**£4,497 million**

**£3,883 million**



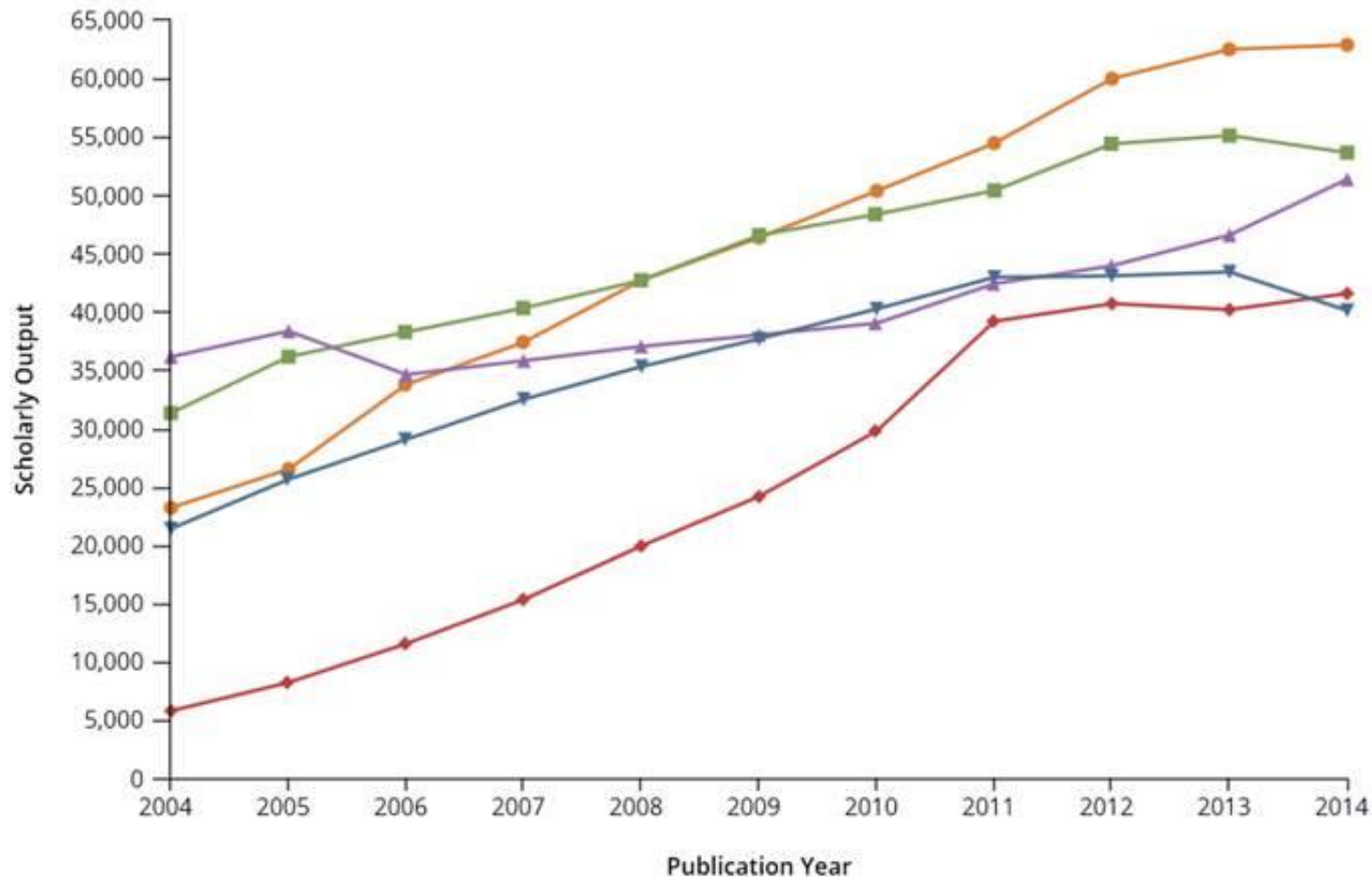
# Global context

- Research becoming more interdisciplinary and more international
- Traditional discipline structures do not map onto new research programmes
- New funding patterns bring academics together across international boundaries

# Russia in the world – peers & publications per year

Scholarly Output 





















Publication Year



Countries and Groups

-  Brazil
-  Iran
-  Netherlands
-  Russian Federation
-  Taiwan

# Russia in the world – FWCI for 2010 -14

Country	Publications ▼	Authors	Field-Weight ▼
1.  United States	2,996,708 ▲	2,179,623 ▲	1.46
2.  China	2,067,844 ▲	2,114,343 ▲	0.79
3.  United Kingdom	867,446 ▲	517,263 ▲	1.55
4.  Germany	760,958 ▲	493,870 ▲	1.43
5.  Japan	646,316 ▼	628,308 ▲	0.98
6.  France	545,869 ▲	366,266 ▲	1.35
7.  India	507,692 ▲	451,349 ▲	0.76
8.  Canada	463,536 ▲	291,010 ▲	1.49
9.  Italy	463,535 ▲	306,644 ▲	1.50
10.  Spain	399,550 ▲	317,632 ▲	1.29
11.  Australia	384,528 ▲	213,550 ▲	1.54
12.  South Korea	346,757 ▲	294,692 ▲	1.08
13.  Brazil	290,275 ▲	372,929 ▲	0.81
14.  Netherlands	262,001 ▲	149,173 ▲	1.79
15.  Russian Federation	223,372 ▲	186,867 ▲	0.67
16.  Taiwan	209,873 ▼	195,153 ▲	1.03
17.  Iran	191,471 ▲	174,734 ▲	0.83
18.  Switzerland	189,970 ▲	117,205 ▲	1.82
19.  Turkey	179,528 ▲	140,737 ▲	0.78
20.  Poland	170,456 ▲	107,042 ▲	0.96

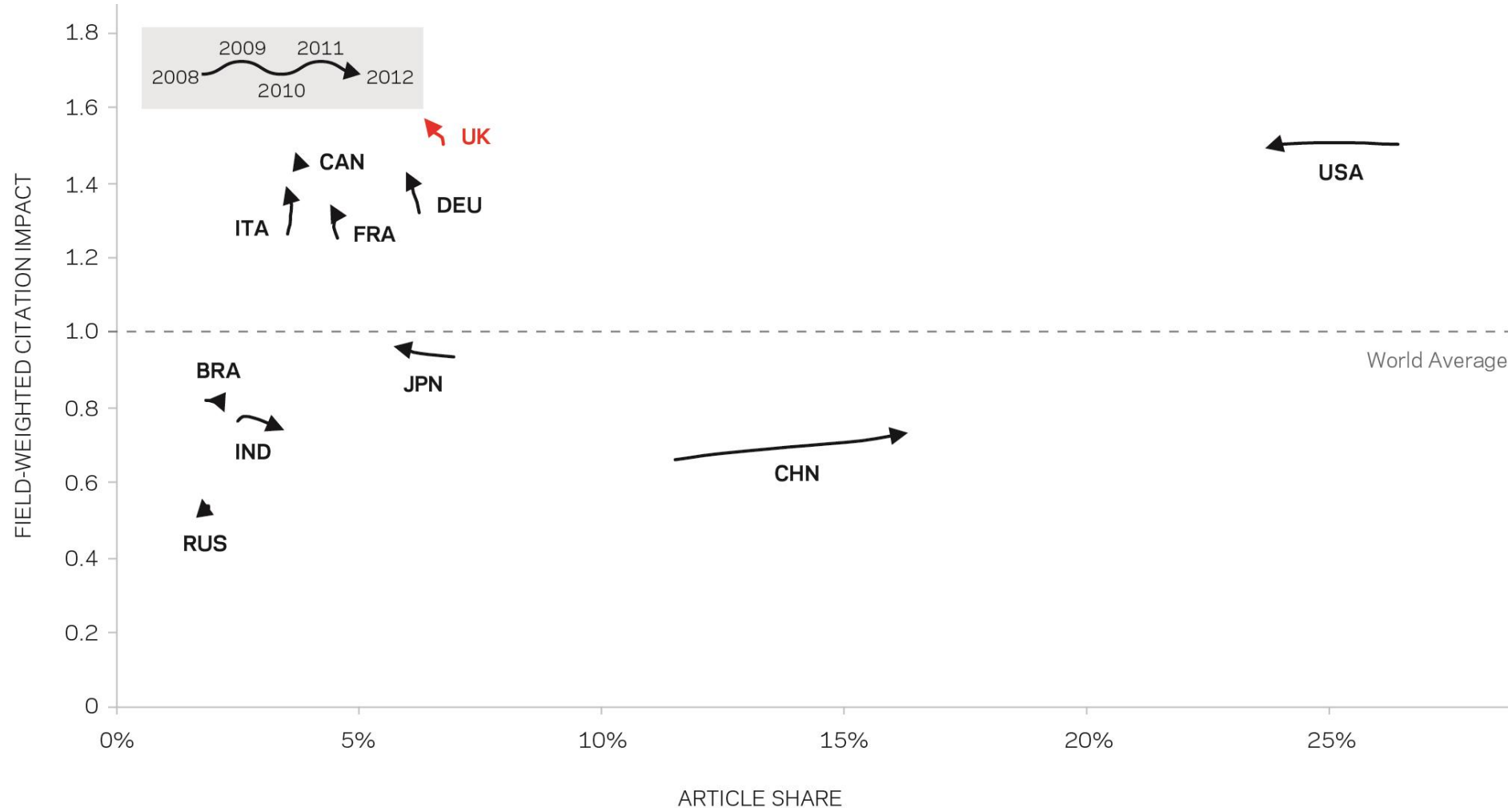
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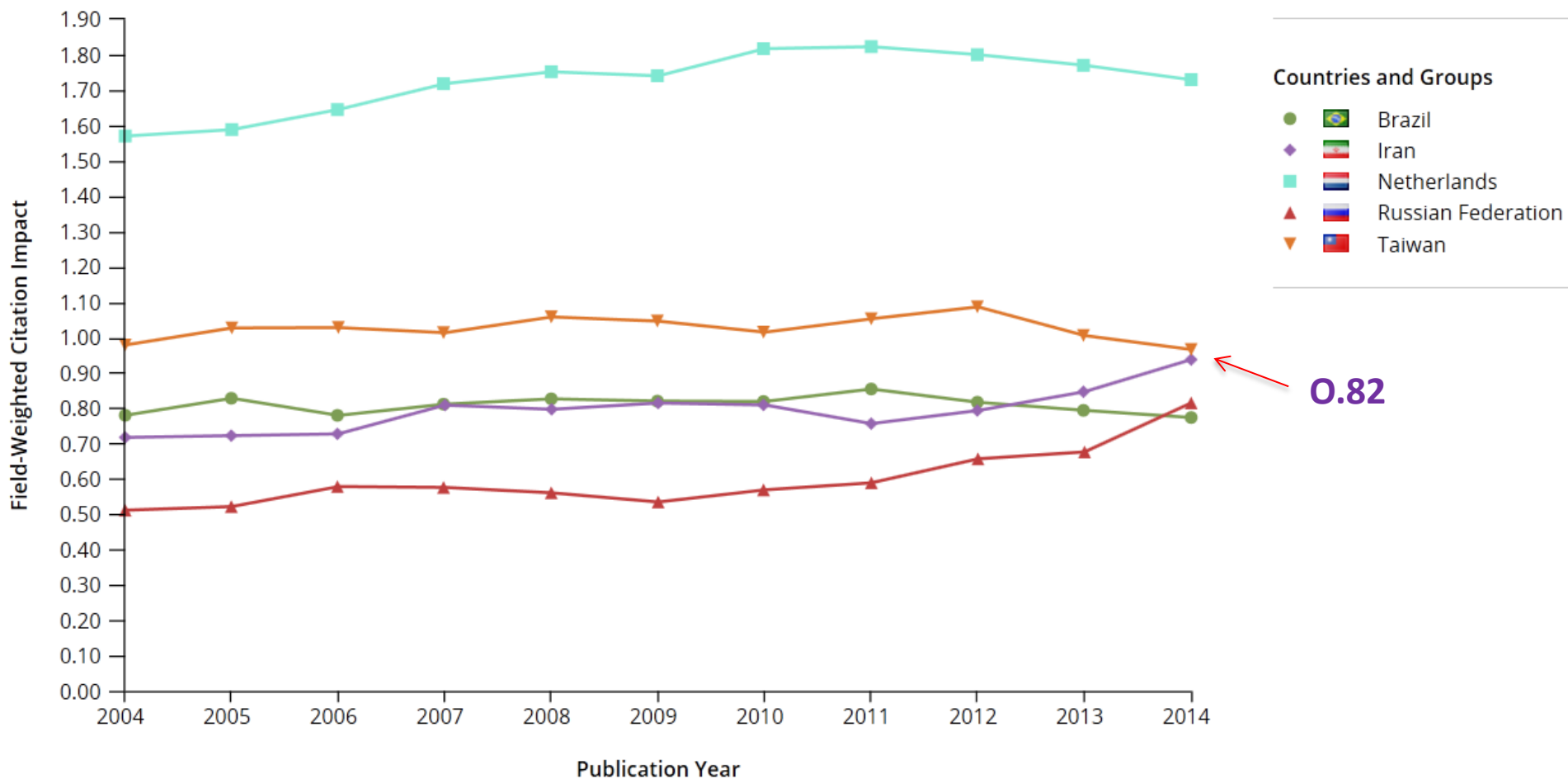
# Global context: article share and FWCI, 2008-12

**FWCI = Field Weighted Citation Index = ratio of citations actually received and the number which would be expected based on the average of the subject field**

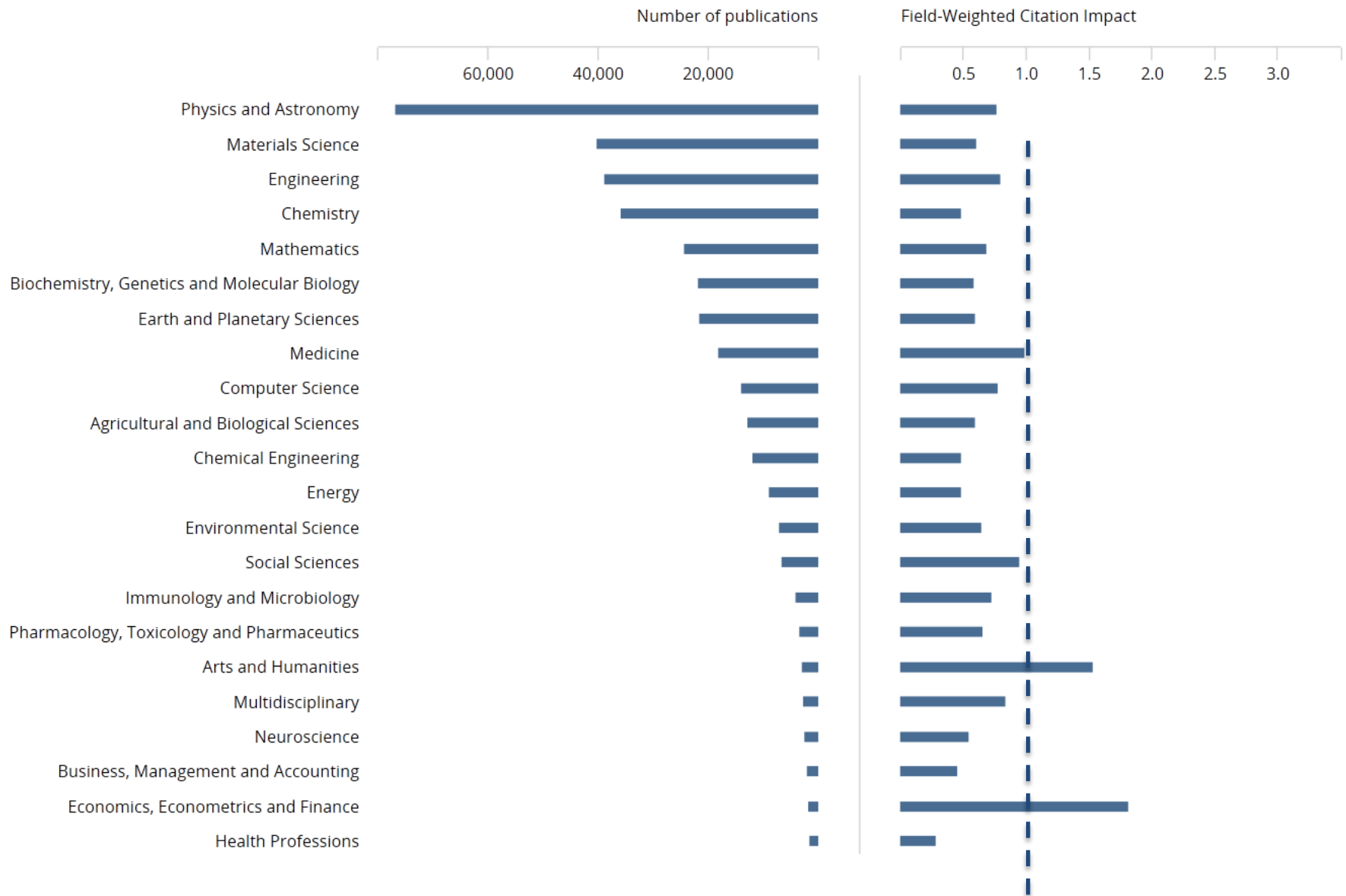




# Russia in the world – peers and FWCI per year



# Russia overall research performance 2010- 14



# Russia compared to the world-performance indicators 2010 - 2014

## Outputs in Top Percentiles

Publications in top 10% most cited worldwide



Russian Federation:  
**6.0%**



World:  
**11.0%**

## Publications in Top Journal Percentiles

Publications in top 10% journals by



Russian Federation:  
**6.5%**



World:  
**17.3%**

## International Collaboration

Publications co-authored with Institutions in other countries



Russian Federation:  
**28.3%**



World:  
**17.4%**

## Academic-Corporate Collaboration

Publications with both academic and corporate affiliations

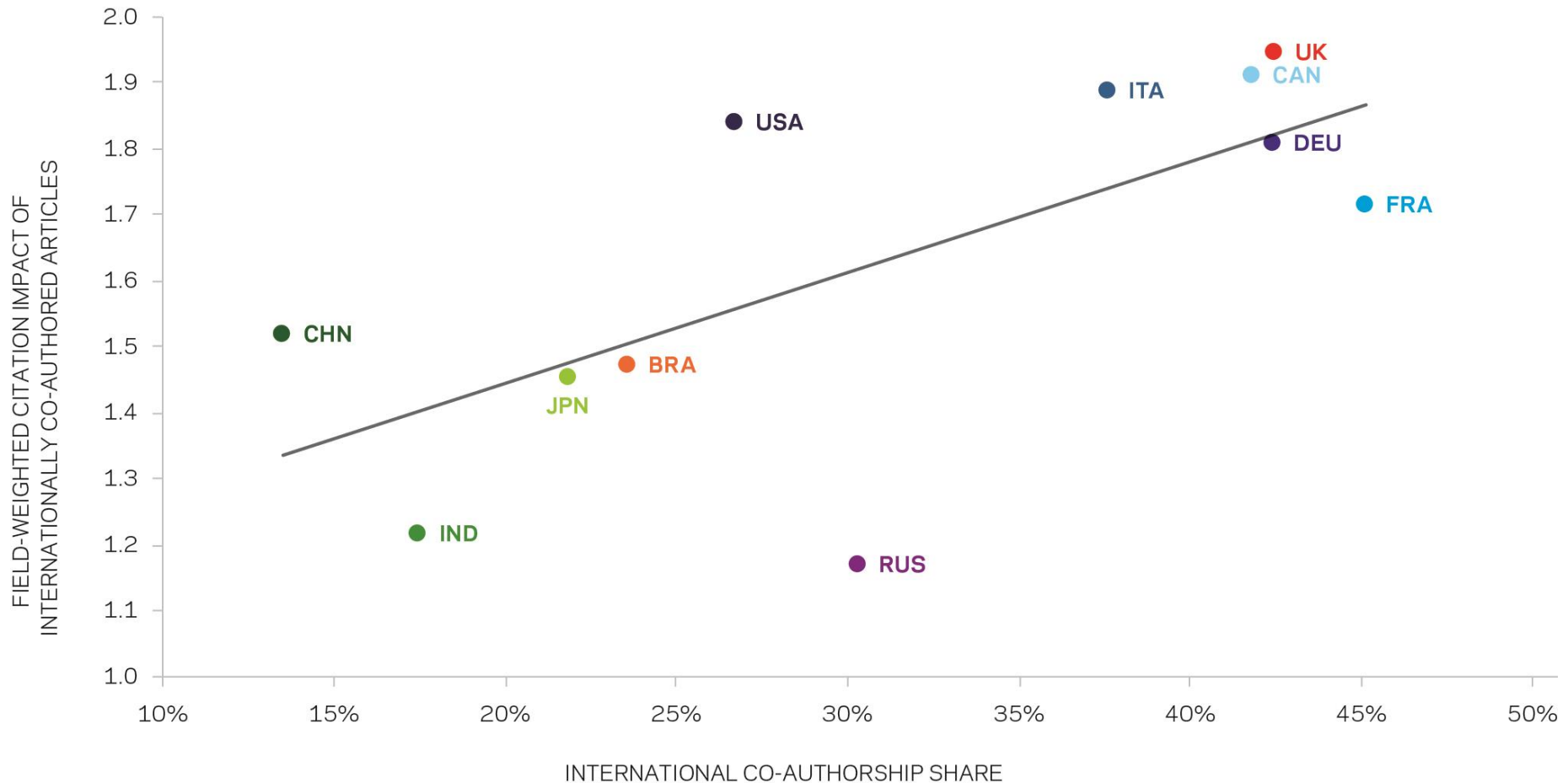


Russian Federation:  
**0.6%**



World:  
**1.3%**

# Global context: quality of output (measured by FWCI) correlated with international collaboration



*Correlation between international co-authorship share and field-weighted citation impact of internationally coauthored articles, 2008*

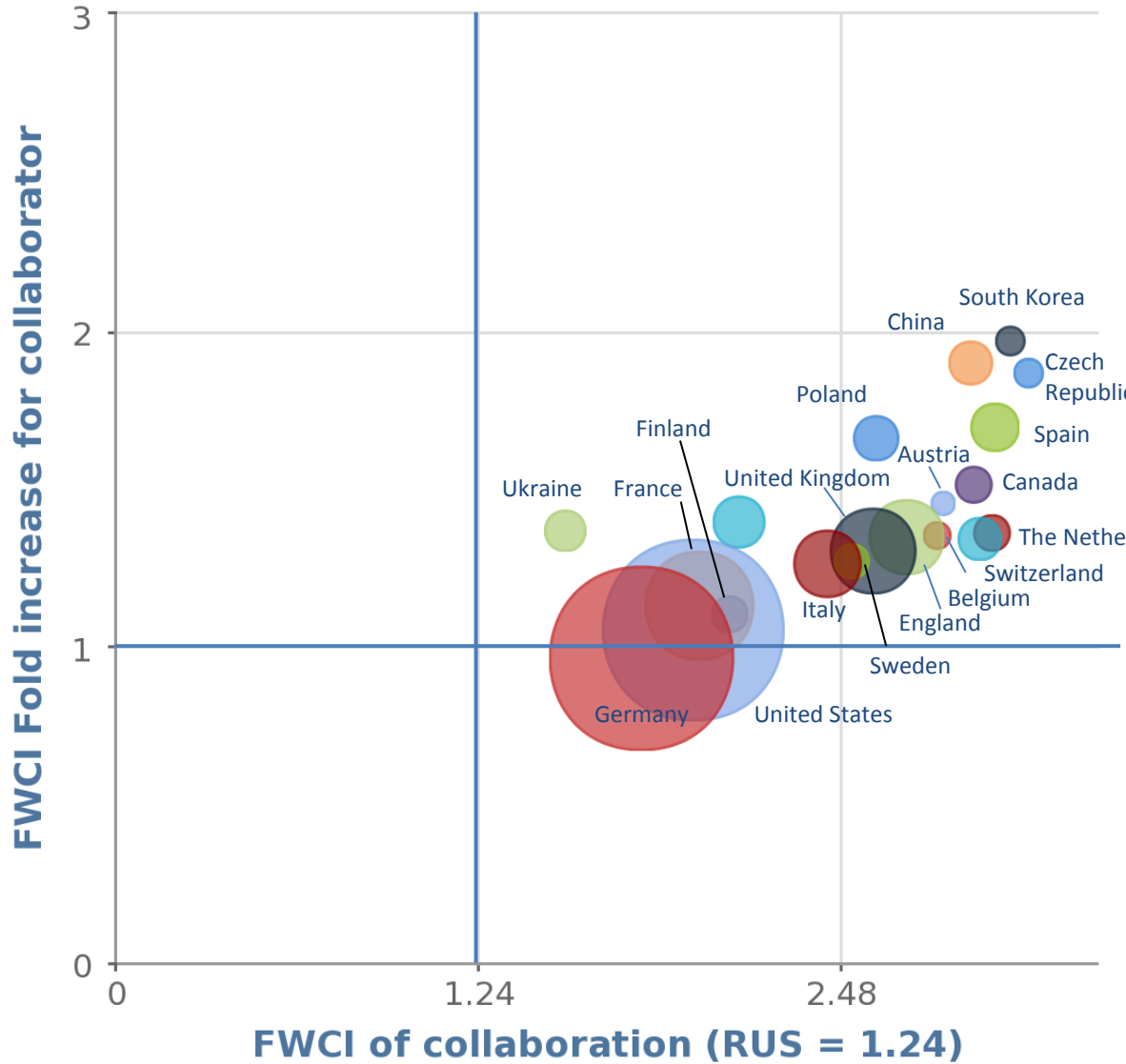
# Impact of Russia collaborating with strong research nations 2010 - 14

Country 	Co-authored publications 	Co-authors in the Russian Federation	Co-authors in the other Country	Field-Weight 
 United States	15,778 	17,038 	36,475 	2.24
 Germany	15,581 	15,974 	22,427 	2.01
 France	9,340 	10,700 	13,022 	2.36
 United Kingdom	7,865 	9,139 	12,938 	2.88
 Italy	6,105 	6,805 	12,876 	2.96
 Spain	4,802 	5,572 	6,390 	3.31
 China	4,524 	5,778 	7,023 	2.97
 Japan	4,434 	5,521 	8,064 	2.64
 Poland	4,286 	5,538 	3,671 	2.67
 Ukraine	4,197 	6,193 	4,253 	1.58

# Collaboration FWCI times/fold increase

Top 20 international collaborators with Russia

Collaboration FWCI Fold increase

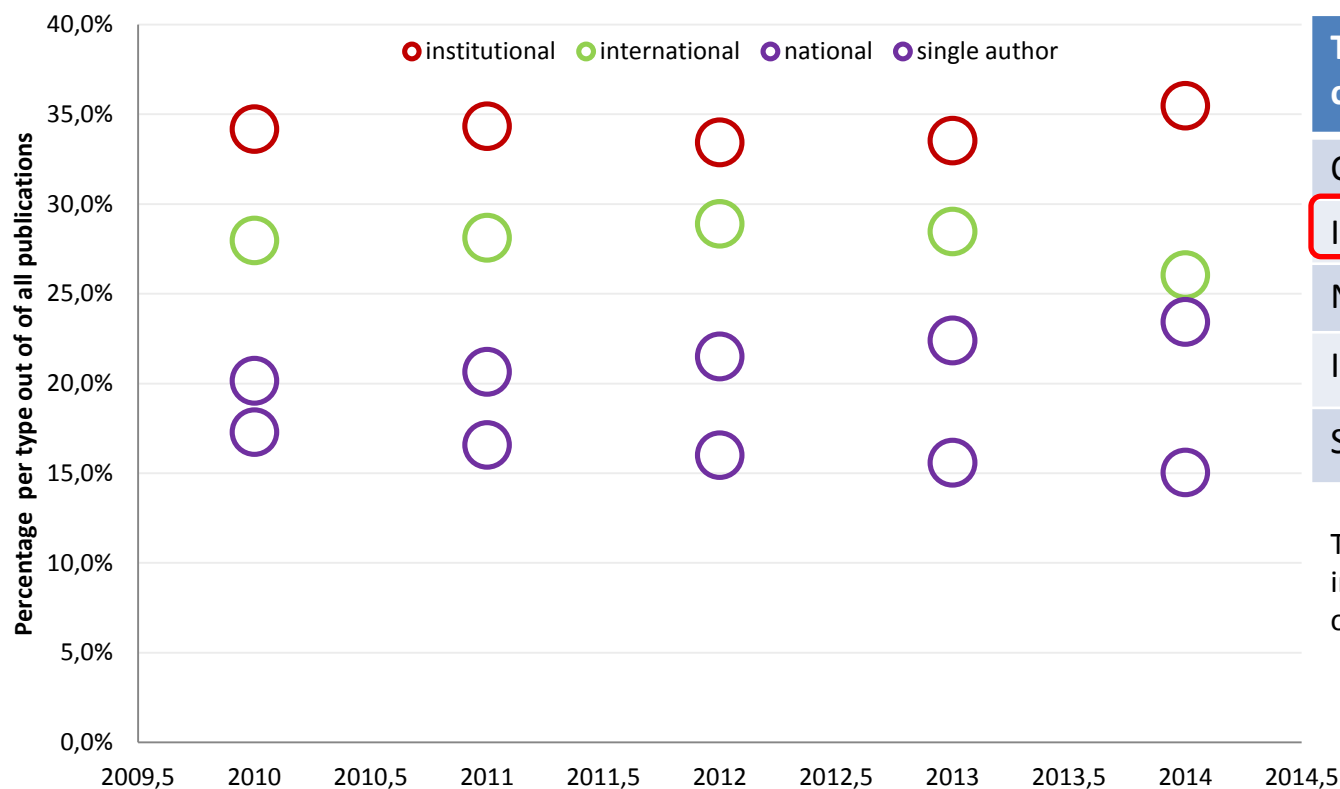


- Czech Republic
- South Korea
- Spain
- Netherlands
- Switzerland
- Canada
- China
- Austria
- Belgium
- England
- Poland
- United Kingdom
- Sweden
- Italy
- Japan
- Finland
- France
- United States
- Germany
- Ukraine

- Bubble size represents the number of co-authored publications with Russia
- Source: Scopus data 2008-2012

# Collaboration trends in Russia

## Collaboration types

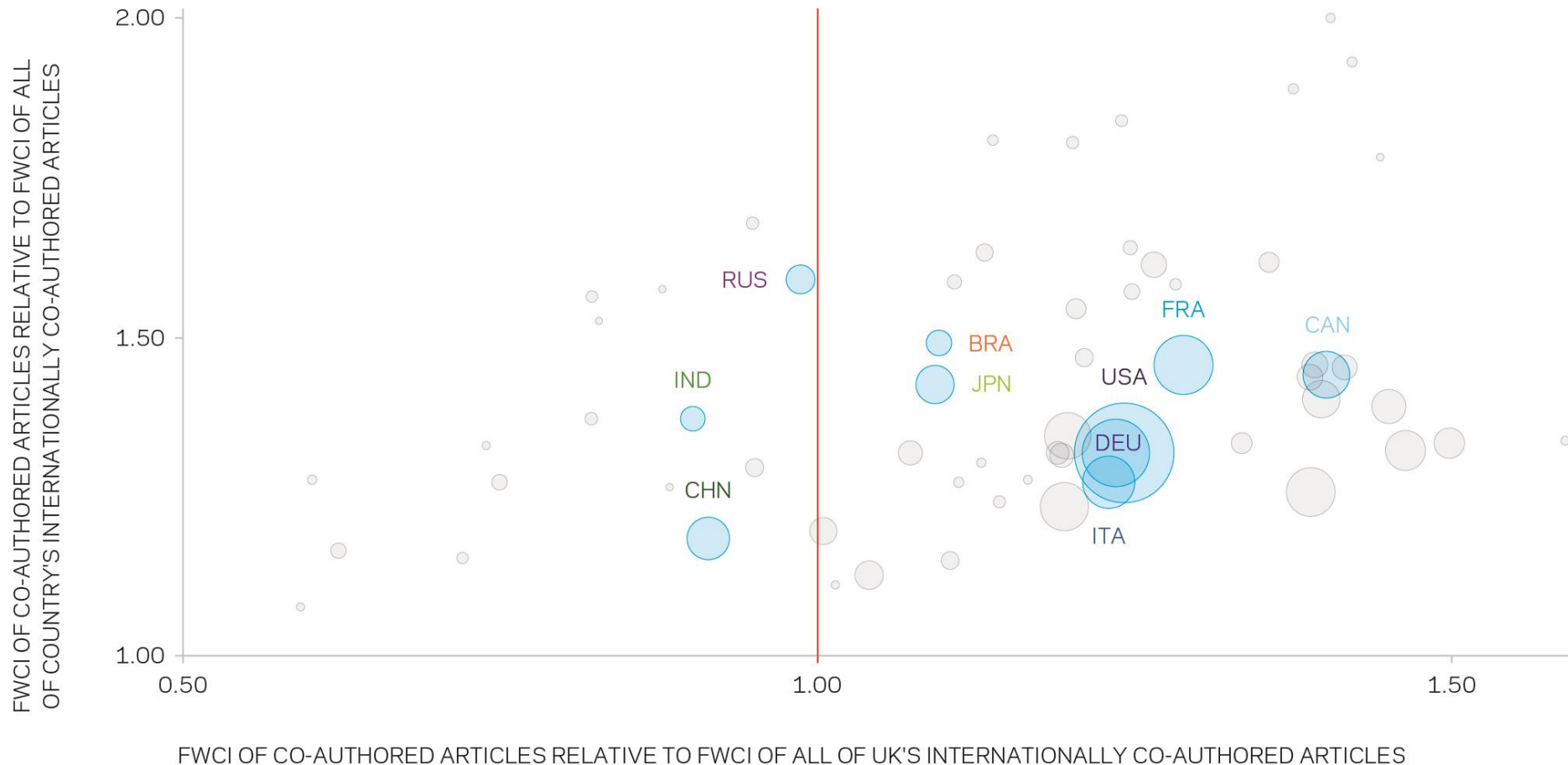


Type of collaboration	FWCI 2014
Overall	0.82
International	1.52
National	0.52
Institutional	0.53
Single author	0.48

The difference between the FWCI of int. collaboration and the rest of the other types is more than 3 times .

- Unlike many research intensive countries or emerging countries (BRICS), Russia's most collaboration type is **not** international collaboration, rather it's within institutions This shows even some increase in the last couple of years
- International collaboration is stable and even decreasing in 2014. This is not a healthy development for Russia for increasing the overall FWCI
- National collaboration is on the rise with a notable increase of 3.1%
- If the international collaboration rate was higher the overall FWCI will be higher than the current 0.67 (below average). Other countries are benefiting greatly from the FWCI of internationally co-authored papers as the rate there is much higher than the 26% observed in 2014 for Russia

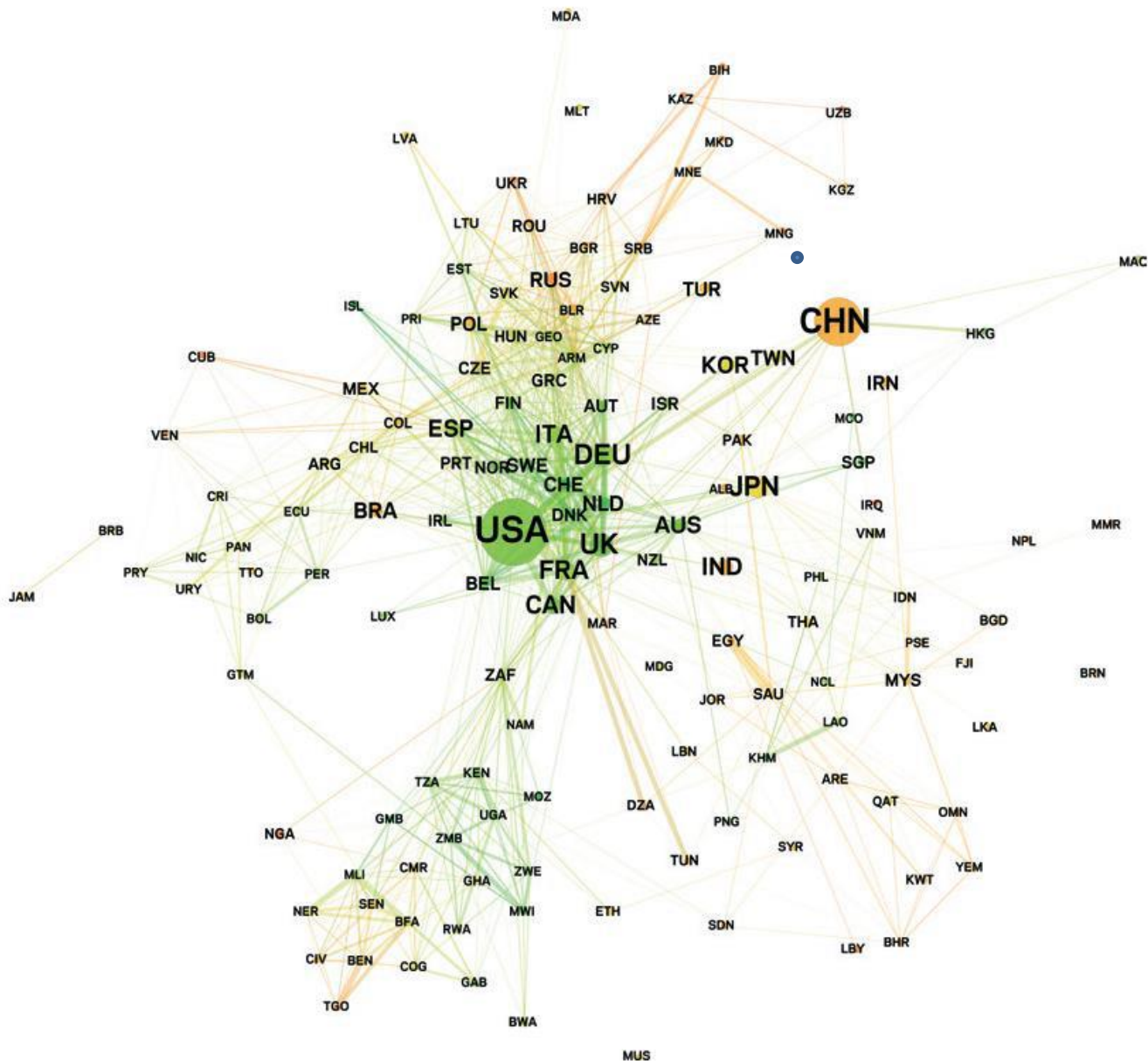
# What does collaboration achieve for the UK and for the countries with which it collaborates?



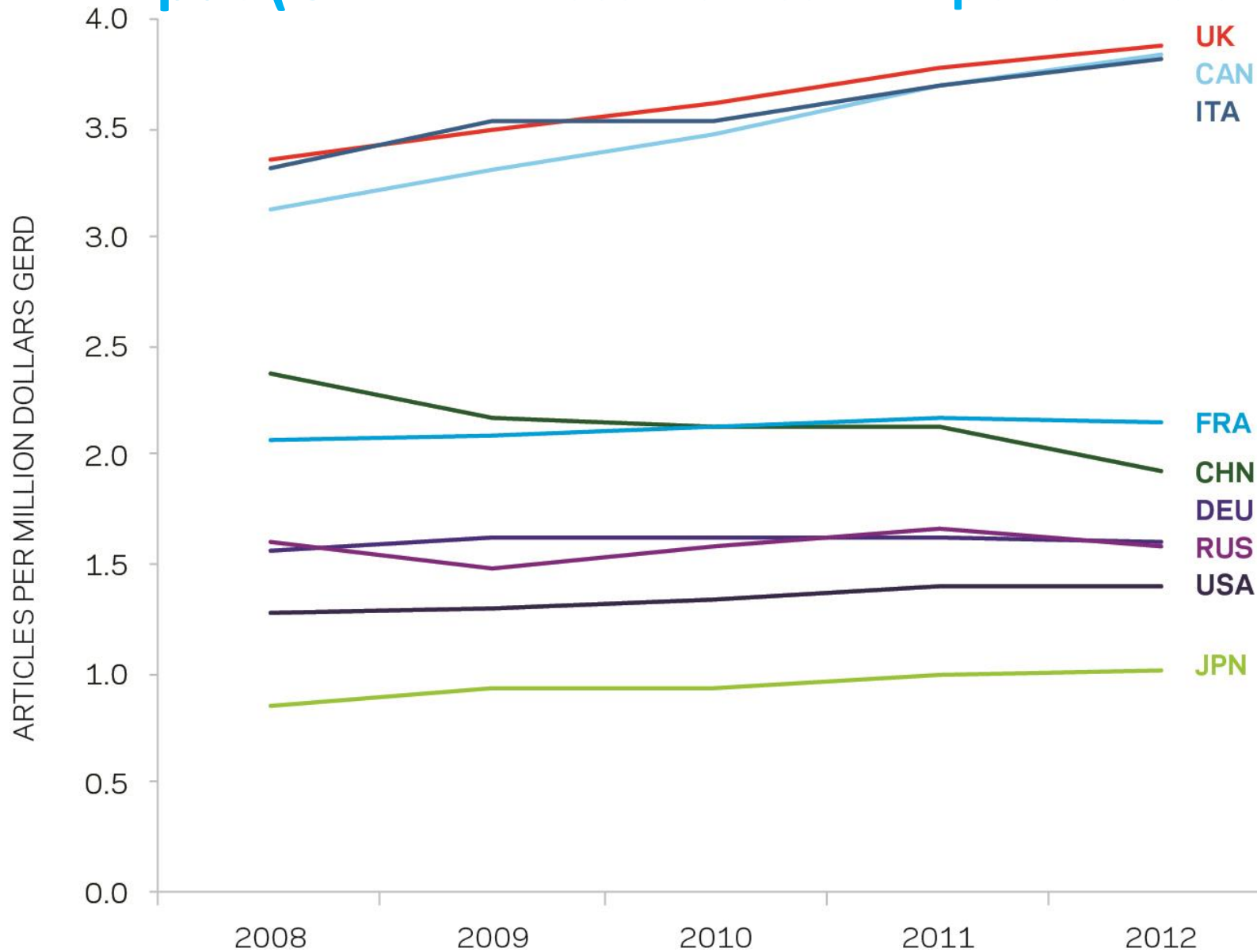
*Field-weighted citation impact of UK internationally co-authored articles by co-authoring country, 2008-2012. Bubble size is proportional to the number of co-authored articles*



# Global co-authorship 2008-2012

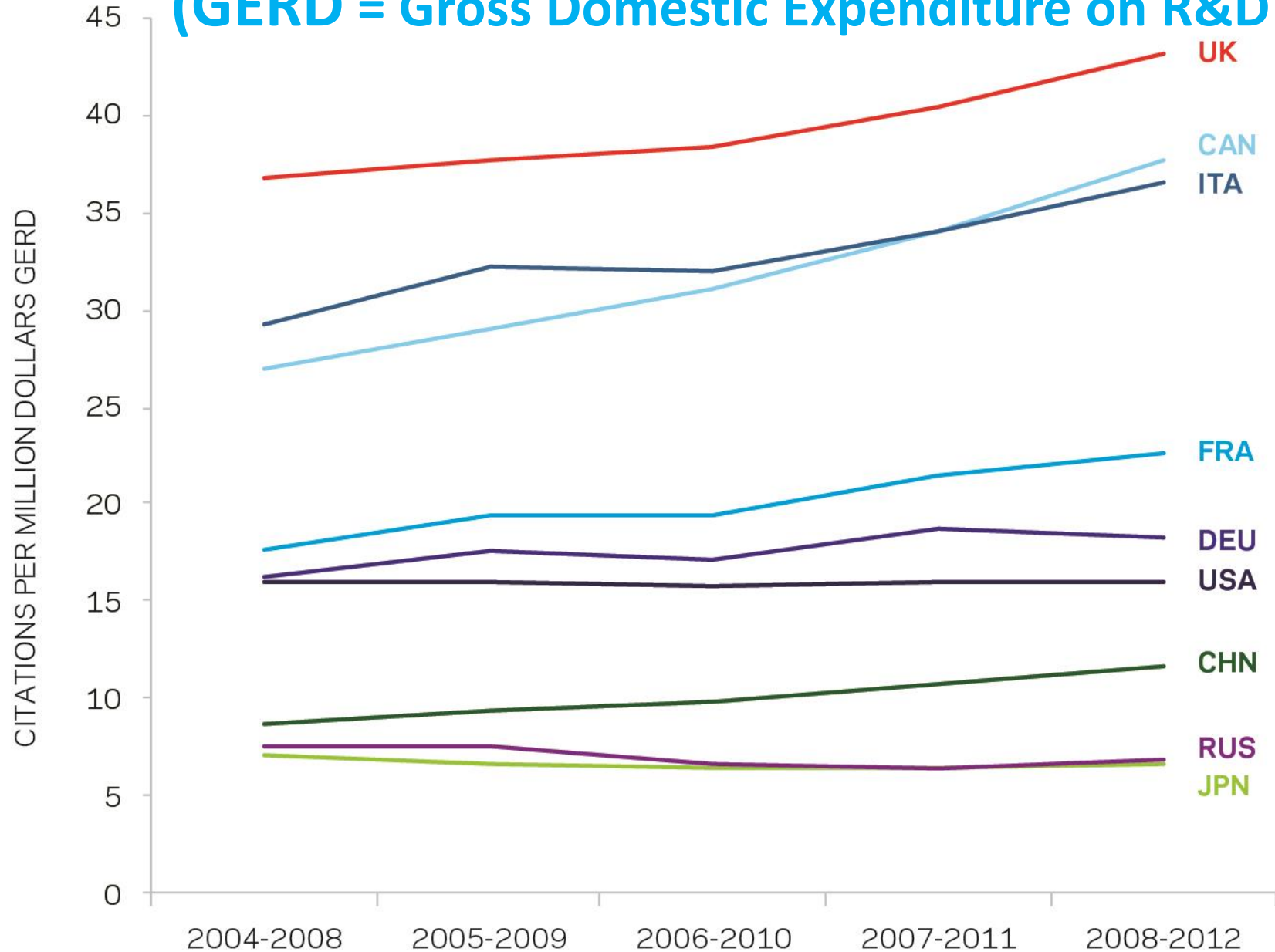


# Efficiency: global context: article output per \$ input (GERD = Gross Domestic Expenditure on R&D)



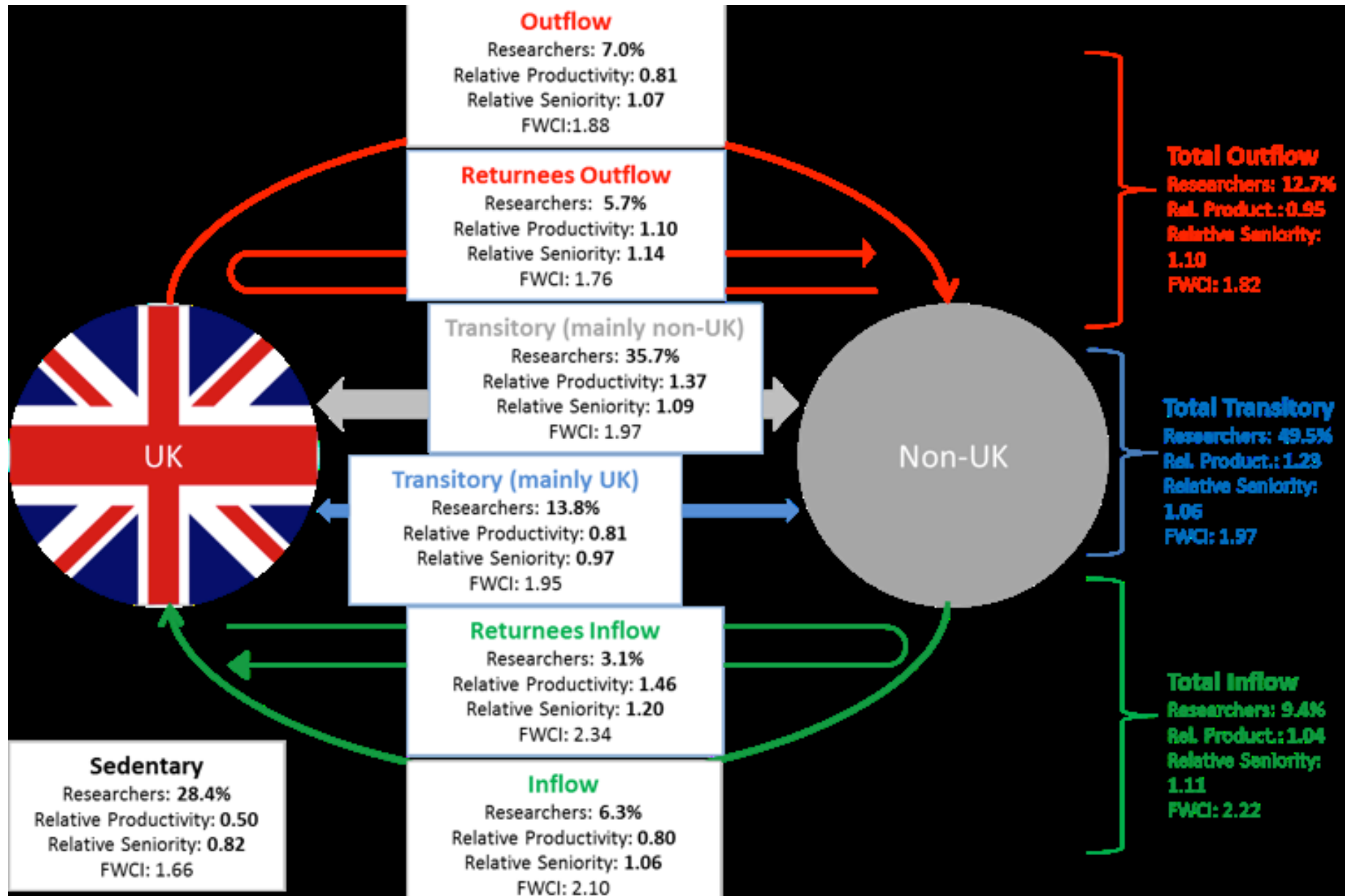
Articles per unit GERD, 2008-2012

# Efficiency: global quality of output per \$\$ input (GERD = Gross Domestic Expenditure on R&D )



*Citations per unit GERD, 2008-2012*

# International mobility of UK researchers 1996-2012



# What to do

- Focus on **quality not volume**
- Promote focused **international collaboration**  
(it's not how many MoU's but the quality of the relationship)
- Incentivise young academics  
(e.g. through **international movement**)
- **Reward** departments for number of PhD's  
(? shorten length – UK universities penalised for PhDs taking > 3 years)
- Promote **inter-disciplinary research**  
(break down barriers between departments – e.g. joint seminars)
- Promote **efficiency** for academics (e.g. central **support** for funding applications e.g. one person manages big calls such as H2020)
- **Manage** the IP  
(e.g. reward staff and have an effective tech transfer unit)
- Actively **translate** successful models

# Thank you

**John Green**

*formerly Chief Operating Officer, Imperial College London 2004 – 2010  
now Life Fellow, Queens' College Cambridge*

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Snowball Metrics <http://www.snowballmetrics.com/>

Metrics guide [http://bit.ly/scival\\_metrics\\_guide](http://bit.ly/scival_metrics_guide)

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